

INDIANA DEPARTMENT OF TRANSPORTATION



US 31 Preliminary Alternatives Analysis and Screening Report



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Engineers and Planners

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1.0 INTRODUCTION

1.1 Project Description

The US 31 Improvement Project is located in Hamilton County, Indiana between I-465 and State Road (SR) 38, a distance of 12.5 miles (Figure 1-1). The project area passes through the City of Carmel, Clay Township, the Town of Westfield, and Washington Township. Near the southern terminus, I-465 represents a major origin and destination point for US 31 traffic, while the northern terminus, SR 38, is the most significant east-west arterial north of Westfield. In addition, traffic patterns and volumes on US 31 along with land use and roadway characteristics change significantly beyond these termini. As such, this segment of US 31 has “independent utility.” This corridor, part of the US 31 “commerce corridor” between St. Joseph and Marion counties, was included in INDOT’s 1995 Long Range Transportation Plan and has also been designated as a “statewide mobility corridor.”

US 31 is a four lane (six lanes between I-465 and 106th Street), divided roadway with limited access right-of-way and at-grade intersections (partial access control). It is classified as an Urban Principal Arterial. There are currently 15 signalized and 7 unsignalized intersections along the US 31 corridor with interchanges at I-465 and SR 431. While access is controlled along US 31, several private properties located north of the SR 431 interchange have direct access to the roadway.

US 31 currently has 12-foot wide travel lanes with an 11-foot paved outside shoulder and a 4-foot paved inside shoulder. The northbound and southbound travel lanes are separated by a 50 to 60-foot wide depressed median. There are also right and left turn lanes at all major intersections. The total right-of-way is typically 290 feet wide south of 146th Street and ranges from 150 to 180 feet wide north of 146th Street.

The adjacent land use in the southern portion of the US 31 corridor is primarily office development while the northern portion of the corridor (north of Westfield) is primarily agricultural. Commercial and residential developments along with small isolated forested areas are also scattered along the corridor. Public facilities and sensitive land uses along US 31 include three churches, two cemeteries, Cool Creek Park, three public schools and St. Vincent Carmel Hospital.

This Preliminary Alternatives Analysis and Screening Report is being distributed to provide the opportunity for citizens, public officials, and state and federal agencies to comment regarding the alternatives being developed by the Indiana Department of Transportation (INDOT) to improve the US 31 corridor. Following this process, the Federal Highway Administration (FHWA) and INDOT will prepare a Draft Environmental Impact Statement (DEIS) for the US 31 Improvement Project.

This project is included in the Indianapolis Metropolitan Planning Organization’s (MPO) Long Range Transportation Plan. A Notice of Intent to prepare an EIS was published in the Federal Register on June 21, 2000. In addition, an Early Coordination Packet was distributed in December 2000 to federal, state and local agencies, as well as placed on the project’s website for general viewing. Agency responses to this packet are on file.

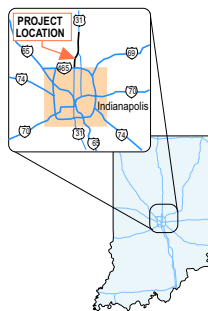
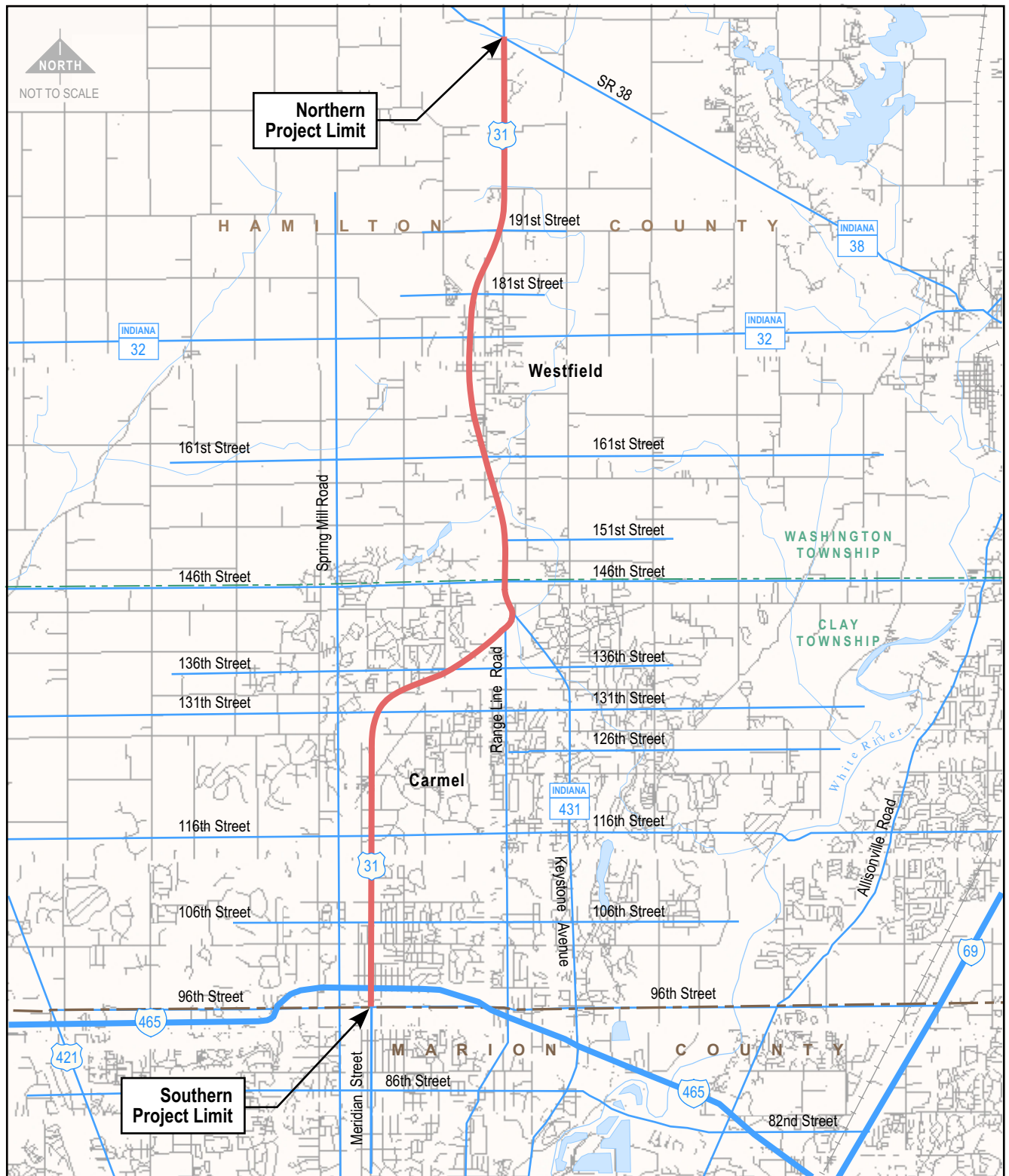


FIGURE 1-1
PROJECT LOCATION

1.2 Summary of Purpose and Need

A Purpose and Need Statement for the US 31 Improvement Project was completed in May 2001 and the findings presented at a Public Meeting and an Interagency Review Meeting in June 2001. For more detailed information, copies of the final report are on file.

1.2.1 Project Need Statement

Transportation improvements to US 31 between I-465 and SR 38 are needed for the following reasons:

Traffic Congestion and Capacity Needs

- ## For the year 2000, 7 out of 15 (47 percent) intersections operate at level of service (LOS) E or F during the AM and/or PM peak hours (LOS D is minimally acceptable based on INDOT's current standards).
- ## By the year 2025, 13 out of 15 (87 percent) intersections are projected to operate at LOS E or F during the AM and/or PM peak hours.

Note: Level of service (LOS) describes a measure of congestion on roadways. LOS ranges from A to F, with LOS A indicating the least traffic congestion and LOS F indicating the most traffic congestion. INDOT standards state that for a multi-lane urban arterial, LOS C or better is desirable while the minimum LOS is D. LOS results have been updated and differ from the Purpose and Need Statement.

Safety

- ## Six of the ten roadway segments on US 31 have crash rates greater than the statewide average for similar facilities.
- ## Seven of the ten roadway segments on US 31 have injury crash rates greater than the statewide average for similar facilities.

Note: Crash numbers have been updated and differ from the Purpose and Need Statement.

Consistency with Regional (MPO) and Statewide (INDOT) Long Range Transportation Plans

- ## US 31 has been designated as a "Statewide Mobility Corridor" as well as an important "Commerce Corridor" by the State of Indiana, is part of the National Truck Network and represents the only continuous transportation link between Indianapolis and north-central Indiana (e.g., South Bend).
- ## Improvements to the US 31 corridor have been identified in the Indianapolis MPO 2025 Regional Transportation Plan.

1.2.2 Project Purpose Statement

Based on the transportation needs listed, the purpose of the US 31 Improvement Project is to:

- ## Reduce congestion for the US 31 corridor;
- ## Improve the level of safety for motorists using the US 31 corridor.
- ## Provide for the reliable and efficient movement of commerce and regional travel that is consistent with INDOT's Long Range Plan for providing a "Statewide Mobility Corridor" and the regional (MPO) transportation plan.

1.2.3 Public Meeting/Interagency Review Meeting and Fieldtrip

On June 27, 2001, a Public Meeting was held at the Carmel High School for the US 31 Improvement Project. Presented at the meeting was the purpose and need of the project and the preliminary alternatives to be considered for evaluation in the next phase of the project. Individuals were encouraged to submit written comments at the meeting or to contact the project office with any comments or concerns.

On June 28, 2001, an Interagency Review Meeting and fieldtrip was conducted to introduce federal, state and local agencies to the project. Those agencies present at the meeting included the Indiana Department of Transportation, Federal Highway Administration, US Environmental Protection Agency Region 5, and the United States Fish and Wildlife Service. At this meeting, the purpose and need of the project and the preliminary alternatives to be considered were presented and reviewed. Following the meeting, a fieldtrip was conducted to tour the project area. This trip consisted of 25 specific points of interest that could raise problematic issues in the project's development. These issues included sensitive ecosystems, major water bodies, commercial and residential developments, office complexes, and current design and function issues of the existing facility (i.e., unlimited access points, intersections, etc.). A record of this meeting and any agency responses to items discussed at the meeting are on file.

2.0 METHODOLOGY FOR SCREENING ALTERNATIVES

All of the alternatives developed for the US 31 Improvement Project were evaluated to determine if they would be carried forward for evaluation in the Draft Environmental Impact Statement (DEIS). A two-phase process was used to screen each alternative. This process is described below.

2.1 Phase 1: Purpose and Need

The first phase of this process analyzed the alternatives with respect to the purpose and need. To meet the purpose and need for this project, an alternative would have to improve levels of service to LOS D at a minimum, while LOS C or better is desirable, reduce crash rates and be consistent with state and regional plans. If it was determined that an alternative would clearly not satisfy the purpose and need, it was not advanced to the next phase. Alternatives that would meet the purpose and need were advanced.

In terms of improving LOS, the analysis of alternatives focused on the five intersections projected to have the worst levels of service north of I-465: 106th, 116th, 126th streets, Greyhound Pass and SR 32. Future average daily traffic (ADT) volumes used to conduct this analysis were generated based on output from the Indianapolis MPO travel demand forecast model. Detailed results of these analyses are presented in Appendix B.

Safety on roadway segments can be improved by upgrading a road facility's class (e.g., from a traffic-signal controlled facility to a freeway). The majority of accidents on US 31 occur during the week and during the peak hours, the time when traffic demand is high. Most of the accidents are rear-end, which also occurs during the high-demand periods. Additionally, it is expected that an upgrade in facility type would reduce crash risk. Crash rates in Indiana are lower for urban freeways than principal arterials and other freeways. The statewide average crash rate for an urban freeway or expressway is 180 per hundred million vehicle miles (HMVM) traveled whereas an urban interstate has a crash rate of 53 per HMVM traveled. Sections of US 31 currently have crash rates ranging from 90 to 460 per HMVM traveled.

Alternatives were also evaluated to determine if they were consistent with state and regional transportation plans. These plans include the Indianapolis MPO 2025 Regional Transportation Plan and INDOT's 2000-2025 Long Range Plan.

2.2 Phase 2: Environmental Impacts

The second phase of the process analyzed the environmental impacts of the alternatives advanced from Phase 1. An environmental database was created using readily available data for the US 31 corridor. Geographic Information System (GIS) technology was used to display information, identify potential impacts and facilitate the screening process. The relative order of magnitude of impacts associated with alternatives advanced to this phase were assessed using this GIS tool. The following information was assessed:

Land Use;

- ☒ Buildings (Residential, Retail, Office, Institutional, etc.);
- ☒ Cemeteries;
- ☒ Public Parks/Section 4(f);
- ☒ Emergency Facilities;
- ☒ Hazardous Materials;
- ☒ Utilities;
- ☒ Wetlands;
- ☒ Water Resources;
- ☒ Floodplains;
- ☒ Vegetation and Wildlife Habitat;
- ☒ Threatened and Endangered Species;
- ☒ Soils; and
- ☒ Historical & Archaeological/Section 106 Resources.

Section 4 presents the preliminary alternatives and the screening results. Each step is described and appropriate figures and tables are used to present relevant information. There is a clear rationale presented for those alternatives eliminated from further consideration and those that are retained for further study in the DEIS.

3.0 ENVIRONMENTAL OVERVIEW

The project area boundaries for the alternative analysis screening include the Hamilton/Marion county line (i.e., 96th Street) to the south, SR 38 to the north, Towne Road to the west and SR 431 to the east. This area includes the City of Carmel, Clay Township, the Town of Westfield and Washington Township. The communities of Eagletown and Hortonville, incorporated areas of Washington Township, are also within the northwest boundary of the project area.

3.1 Land Use

Land use within the project area consists of agricultural, residential, commercial/retail and office space (Appendix A, Figure A-1). The southern portion of the project area is highly developed by office and business development along the US 31 corridor whereas the northern portion is primarily agricultural land, especially north of Westfield. Residential land use accounts for 46 percent of the land in Carmel/Clay Township and 18 percent in Westfield/Washington Township. Commercial and residential developments along with small, isolated wooded areas are widely scattered throughout the corridor. However, the densest residential development is found south of 146th Street (west of US 31) as well as between US 31 and SR 431.

3.2 Population

Hamilton County had a population increase of 68 percent from 1990 to 2000, increasing from 108,936 people to 182,740 (Table 3-1). This high growth is expected to continue with population projected to exceed 300,000 by 2025, a 69 percent increase from 2000, with nearly 45 percent of the population residing in Clay and Washington townships.

Table 3-1
Population Trends and Projections

	1990	2000	Change 1990-2000	2025	Change 2000-2025
State of Indiana	5,554,890	5,987,900	8%	N/A	N/A
Indianapolis 8-County Metropolitan Area	1,249,822	1,474,128	18%	1,764,670	20%
Hamilton County	108,936	182,740	68%	308,300	69%
Clay Township (includes City of Carmel)	42,987	64,709	51%	102,200	60%
Washington Township (includes Town of Westfield)	9,379	18,358	96%	32,500	77%

Source: US Census/Indianapolis MPO

Clay and Washington townships are of specific interest, as they include the City of Carmel and the Town of Westfield, respectively. These municipalities are undergoing rapid development and population expansion. Between 1990 and 2000, the population of Clay Township increased by 51 percent while Washington Township increased by 96 percent. By 2025, Clay Township's population is expected to increase an additional 60 percent, and Washington Township's population is projected to increase 77 percent during this same period.

According to the 2000 census data (Stats Indiana, retrieved January 14, 2002), 94.4 percent of the population in Hamilton County reported being Caucasian with a median age of 34.1 years. Minorities accounted for 5.6 percent of the population, the majority of which (2.4 percent) were Asian. These demographic trends are similar in the townships and local municipalities (Stats Indiana, retrieved March 13, 2002). Clay Township reported a white population of 93 percent with the largest minority being Asian, representing 4 percent of the township's population. The City of Carmel reported a white population of 92.6 percent, with Asian being the largest minority, comprising 4.4 percent. Washington Township had a white population of 94.9 percent with Asians accounting for 1.6 percent. Similarly, the Town of Westfield reported 93.6 percent of the population being white while Asians account for the largest minority with 1.8 percent.

3.3 Employment and Income

Employment growth is strong within the project area, with much of this growth occurring within the US 31 corridor, where substantial new office space is occurring. Clay and Washington townships currently account for 40 percent of the employment within Hamilton County (Table 3-2). Employment within these townships is projected to increase by 74 percent from 2000 to 2025. Hamilton County as a whole is projected to contain almost 150,000 jobs, a 51 percent increase over this same period.

Table 3-2
Employment Trends and Projections

	1990	2000	Change 1990-2000	2025	Change 2000-2025
State of Indiana	3,083,460	3,613,770	17%	N/A	N/A
Indianapolis 8-County Metropolitan Area	806,610	966,480	20%	1,293,300	34%
Hamilton County	57,640	96,750	68%	145,780	51%
Clay Township (includes City of Carmel)	24,784	29,005	17%	44,000	52%
Washington Township (includes Town of Westfield)	5,519	9,804	78%	23,400	139%

Source: Indianapolis MPO/The Polis Center

As it relates to employment, the county ranks first in per capita and median household income in the State of Indiana. Per capita income in 1999 was \$40,435 while median household income in 1997 was \$68,017. The poverty rate in 1997 was the lowest in the state at 3.2 percent. Most recently reported in October 2001, the unemployment rate was again the lowest in the state at 2.1 percent.

3.4 Public Parks and Recreation Areas/Section 4(f) Land

Section 4(f) land in the project area includes city, county, and township parks as well as those portions of school properties that are available to the public and are used for recreational purposes (e.g., playgrounds, soccer fields) (Appendix A, Figure A-1). According to FHWA Section 4(f) Policy regarding school playgrounds, "when the playground is open to the public and serves either organized or recreational purposes (walk-on activity), it is subject to the

requirements of Section 4(f) if the playground is determined to be significant for recreational purposes.” Historic resources, also considered Section 4(f) properties if they are listed on the National Register of Historic Places (NRHP) or individually eligible for such listing, are discussed in Section 3.11 – Historical and Archaeological/Section 106 Resources. Section 4(f) property in the project area includes:

- ## Westfield Washington School District – recreational areas
- ## Carmel Clay School District – recreational areas
- ## Town of Westfield Parks
- ## Washington Township Parks
- ## Carmel Clay City Parks
- ## Hamilton County Parks
- ## The Nature Conservancy

Westfield Washington school properties are located north of SR 32 with the main concentration of schools between US 31, Union Street and SR 32. Because of their proximity to US 31, the school district was contacted to assist in better defining those parcels of their property that would be considered Section 4(f) land. These parcels include the tennis courts, two playgrounds, one soccer field, one practice football field and the open area adjacent to it, two soft/baseball fields, and the football field/track area (Appendix C). Carmel Clay school properties are scattered throughout the area from Towne Road on the west to SR 431 (i.e., Keystone Avenue) at the eastern boundary of the project area. Similar to Westfield Washington Schools, those parcels of property available to the public include playground areas and some open athletic fields.

At the northeast corner of US 31 and SR 38, Washington Township Parks has purchased and obtained ownership of 40-acres of land and is planning a passive park, namely MacGregor Park, at this location (Appendix C). The Town of Westfield has several small parks consisting mainly of playground equipment and landscaping. Several of these are located immediately in downtown Westfield, including Hadley Park and the South Union Street Trail. Through a grant from the Indiana Department of Natural Resources (IDNR), this trail is a planned bike trail that will parallel the west side of Union St. (i.e., Rangeline Road) from Cool Creek Park in the south to Woodside Drive just north of 161st Street. Right-of-way for this project has both been donated to and purchased by the Town of Westfield (source: David Johnston, Town of Westfield, May 22, 2002).

Carmel Clay City Parks are concentrated east of US 31 with a few in outlying areas in the western part of Hamilton County. Generally, these parks are passive with bike and hiking trails and some interpretive trails, including Pleasant Grove Park, Central Park and Meadowlark Park. Many of these have playground equipment as well as soccer and softball fields. As an additional feature, West Park, near Towne Road and 116th Street, will include a created wetland area as part of a wetland mitigation project partnership with a local business.

The Monon Greenway, one of the recreational trails in the area, is a registered trail for the City of Carmel (source: www.MillenniumTrails.com, retrieved March 13, 2002). Ownership of the trail property and its right-of-way belongs to the City of Carmel, where it offers such recreational

activities as walking, biking, and in-line skating (source: Mike Hollibaugh, City of Carmel, May 14, 2002). This trail follows one of the former Louisville, New Albany and Chicago Railroad lines and is approximately five miles long, extending from 96th Street to 146th Street as it traverses the project area between US 31 and SR 431. In September 2001, this trail was connected to the Indianapolis Parks Monon Trail south of 96th Street. The trail passes under US 31 between 136th Street and Rangeline Road.

Hamilton County parks are scattered throughout the project area and consist of picnic shelters and open picnic areas, play areas and softball and soccer fields. Though it also has similar facilities, Cool Creek Park, located at the northeast corner of US 31 and 151st Street, directly adjacent to US 31 right-of-way, also has a nature center and music pavilion where organized activities are offered. Coxhall Park and Gardens is an undeveloped property near Towne Road and 116th Street with proposed trails and landscaping.

Bitternut Woods Nature Preserve is not under the jurisdiction of any of the above localities, but rather it is owned by The Nature Conservancy (TNC) and is listed by IDNR as a state-dedicated nature preserve. With access available to the public, this Section 4(f) property is listed in the Natural Heritage Program (NHP) database and contains two high-quality natural wet-mesic floodplain forest and mesic upland forest communities.

3.5 Farmland

According to the Indiana Agricultural Statistics Service, in 1997 farmland in Hamilton County encompassed 140,813 acres on 591 farms and was ranked third in the state with an average value per acre for land and buildings of \$3,478. In 1998, this land accounted for just 4.1 percent of the assessed land value in the county at \$9.31 million. Cash receipts for the county ranked 44th of Indiana's 92 counties in 1999. Commodities raised in Hamilton County in 2000 were typical of the state and included corn, soybeans, winter wheat, cattle and hay. With a yield of 87 bushels/acre, the county also ranked second in the state for yield of winter wheat. Agricultural land use is shown in Appendix A, Figure A-1.

Prime farmland soils are prominent throughout the project area (Appendix A, Figure A-2). As defined by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), prime farmland is "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, and is also available for these uses (i.e., land that could be cropland, pastureland, rangeland, forest land or other land, but not urban built-up land or water)." These soils must also be protected from flooding and not be susceptible to ponding for long periods of time in order to be considered prime farmland. Soils in the following series are located in the project area and are considered prime farmland soils: Fox, Miami, Milton, Nineveh, Ockley, Ross and Genessee. These soils have the "quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods."

3.6 Wetlands

Wetland ecosystems in the project area were identified utilizing National Wetland Inventory (NWI) maps from the US Fish and Wildlife Service (USFWS). Though not ground-checked, nor do they define jurisdictional wetlands, they are the industry standard when initially attempting to identify wetland areas. Wetlands identified in the project area are fragmented and rather small, primarily less than ten acres (Appendix A, Figure A-3). Most systems are categorized as palustrine, and thus not associated with a river or lake system, but rather dependent on groundwater or precipitation runoff to sustain their hydrologic regime. They vary from emergent to scrub-shrub to forested wetland systems. There are several small riverine wetlands that occur along Cool, Clay and Carmel Creeks near the southern limits of the project area. Typical vegetative species in the wetland areas include black willow, cottonwood, green ash cattails and various reeds and sedges.

3.7 Vegetation and Wildlife Habitat

Wildlife habitats in the project area vary and are constantly under pressure due to (sub)urban development. These habitats include terrestrial ecosystems such as fallow fields, small wooded lots and aquatic ecosystems such as small wetlands, man-made ponds and some creek habitat. A multitude of both plant and animal species can be found in the project area. Examples of typical animal species include white-tailed deer, opossum, raccoons, skunk, rabbits, various small mammals such as mice and other rodents, great blue heron, red-tailed hawk, migrating waterfowl (e.g., Canada geese, mallard, etc.) and a variety of songbird species. Aquatic habitats are home to species such as minnows, sunfish, turtles and various amphibians. Vegetative species include oak, maple and various species of pine and shrub.

Aquatic systems have the potential for providing habitat for fish, invertebrate and mollusk species, however species quantity and variety may be low due to continuing disturbances. Additionally, only Carmel Creek and Cool Creek appear to be sufficient to provide semi-suitable habitat for mussel populations. Due to development in Hamilton County, especially near the US 31 corridor, suitable and high-quality habitat is limited and quickly being diminished.

The Indiana Department of Natural Resources (IDNR) specified that Bitternut Woods Nature Preserve, a state-dedicated nature preserve, is within the boundaries of the project area (Appendix C). This area, located northwest of the 106th Street and Spring Mill Road intersection, as detailed in the Natural Heritage Program (NHP) database, contains two high-quality natural communities, specifically a wet-mesic floodplain forest and a mesic upland forest. Both are categorized as state-significant by the NHP. Species in riparian forest and forested floodplain areas along Cool Creek and Carmel Creek include box elder, silver maple, sugar maple and Ohio Buckeye.

3.8 Threatened and Endangered Species

Information about threatened and endangered species within the project area was provided by the United States Fish and Wildlife Services (USFWS) and IDNR (Appendix C). The USFWS stated that the project area is within the range of the federally endangered Indiana bat and

federally threatened bald eagle. There are no current records of Indiana bats near the project corridor, however, the streams in the affected area have not been surveyed for the species. The USFWS indicated that there is suitable summer habitat for Indiana bats in forested areas along Cool Creek and possibly in the other riparian forest areas within the project area. Locally, there are multiple records of this species in adjacent Marion County, including a location within ten miles of the project area. It was also reported that there are no bald eagle nests or significant habitat areas near the project corridor. According to the IDNR NHP database (January 31, 2002), the Red Shouldered hawk, a state species of special concern, and the American badger, a state endangered species, have been reported to occur in the project vicinity, though these reports are 13 to 45 years old. No critical habitat for any threatened or endangered species, including the Indiana bat, has been identified within the project area.

3.9 Water Resources

Surface Water

Surface water features in the project area are primarily flowing water bodies including creeks and their tributaries, all of which are collectively contained in the Upper White River watershed. As indicated on USGS topographic maps, these water bodies include Lindley, Jones and Almond Ditches, Grassy Branch, Cool, Carmel, Williams, Henley, Elliot, Will, Clay and Center creeks (Appendix A, Figure A-3). There are no natural lakes in the project area. However, many residential developments and commercial/office complexes have man-made retention ponds for recreational, aesthetic, and water storage purposes.

As indicated by the IDNR Division of Water (IDNR website retrieval February 6, 2002), use of surface water has continued to increase from 1986 through 1997, especially for energy production, industry, agriculture and public water supply. Little data is available on the water quality. Volunteer monitors have recorded partial results for only one site near Carmel High School in Cool Creek (Hoosier Riverwatch, retrieved February 6, 2002). Through the USGS National Water Quality Assessment (NAWQA), some regional information is available on surface water quality in the local watershed, though none on the specific water bodies mentioned herein. Overall, findings indicated elevated concentrations of pesticide contaminants were of key concern and that concentrations and types depend heavily on land use in the surrounding area (USGS website retrieval February 18, 2002).

Groundwater

Groundwater in the area is delivered from the White River Basin aquifer system. According to the IDNR, annual groundwater withdrawal between 1986 and 1997 has continued to rise for usage in energy production, agriculture, and public supply (retrieved February 6, 2002). Quality of this water in the watershed, though not necessarily in the project area, has been monitored by the USGS through 94 monitoring wells. Much like surface water, pesticides were of concern, though none exceeded any federal guidelines. Volatile organic compounds (VOCs) were also of concern as they were detected in over half of the shallow urban monitoring wells. These compounds, however, did not exceed federal drinking water standards. Nitrates were also detected in both shallow and deep wells, with concentrations in shallow wells exceeding federal drinking water standards.

Because of the potential for contamination, both the City of Carmel and the Town of Westfield have enacted wellhead protection programs for their municipal water supplies (source: www.ci.carmel.in.us; Sherry Goins, Westfield Utilities, July 9, 2002). These programs require buffers around each of the production wells as well as regulate potential contaminant releases in order to protect groundwater quality. The City of Carmel's 20 production wells are scattered between Rangeline Road and Hazel Dell Parkway, none of which are within the project area. The Town of Westfield has four wells; one is located north of the wastewater treatment plant south of SR 32, three are located immediately east of the existing US 31 alignment near Westfield Elementary School, and all are protected by a 100-foot radius around each of the wells according to the Town's program.

3.10 Floodplains/Floodways

Floodplains, lowland areas adjacent to streams and rivers that are inundated by excess water breaching the stream/river banks during a flood, can be found in the project area in conjunction with several local water bodies (Appendix A, Figure A-3). Of particular interest are the 100-year floodplains as they indicate the most severe and infrequent flood-related water levels and they, as well as their associated floodway (i.e., the canal or path of the floodwater), are regulated via state statutes and laws as to construction within their boundaries. One-hundred-year floodplains can be found along Spring Mill Run, Carmel, Will, Elliot, Henley, Cool and Little Eagle creeks, Almond, Jones and Lindley ditches, and Grassy Branch. Floodways can be found on Cool Creek, Little Cook Creek and Grassy Branch.

3.11 Historical and Archaeological/Section 106 Resources

Archaeological Resources

A literature study was conducted to locate archaeological resources in the project area. This study consisted of examining cultural resource management reports (CRM), archaeological site forms and archaeological and architectural site location maps at the IDNR Division of Historic Preservation and Archaeology (DHPA).

Through the literature search, 42 sites previously surveyed were identified within and adjacent to the project area. These sites include 16 prehistoric lithic scatters, 14 prehistoric isolated fields, 4 prehistoric camps, 3 historic artifact scatters, 1 farmstead, 2 multicomponent farmsteads with prehistoric lithic scatters, and 2 multicomponent historic and prehistoric lithic scatters. Of these, 38 are within the boundary of the project area. Six of these sites were recommended as eligible or potentially eligible for inclusion on the National Register of Historic Places (NRHP) and would require additional surveying if potentially impacted by the project.

In addition to the sites that have been previously located, specific soils and land formations also provide the potential for site discoveries. Soils with the highest probability of producing cultural remains are associated with geographic formations such as terraces and floodplains (Appendix A, Figure A-4). Floodplain associated soils tend to have a high probability to produce cultural materials, but they would also require deep testing as these materials could be buried. Soils with a moderate probability of producing cultural materials are associated with till plains and make up

the majority of the project area. Soils with the lowest probability of producing cultural materials are associated with glacial sluiceways.

Historical Resources

In addition to information provided by the State Historic Preservation Officer (SHPO) at the IDNR, a literature search was conducted to identify historical and cultural resources in the project area. This search documented 94 historical sites within the project area (Appendix A, Figure A-4), though five of these sites could not be located in the field and have most likely been demolished for new development. In general, the sites either were scattered buildings and farmsteads or were concentrated in the local municipalities (i.e., City of Carmel, Towns of Westfield, Eagletown and Hortonville).

Section 106 historic properties that are listed on the NRHP or are eligible for listing on the NRHP are also categorized as Section 4(f) properties. Five such properties are located in the US 31 Improvement Project area. These sites include:

- ## Union High Academy Historic District (listed)
- ## Micah Newby House (listed)
- ## Westfield Historic District (eligible)
- ## Hunt House (eligible)
- ## Lindley Farm (eligible)

3.12 Hazardous Materials Sites

Hazardous materials sites in the area are not necessarily disposal areas for wastes, but rather locations where hazardous substances are handled, produced or stored. The following sites were identified in the project area (Appendix A, Figure A-1):

- ## 52 Underground Storage Tanks (UST);
- ## 19 Leaking Underground Storage Tanks (LUST);
- ## 29 IN Spills: Indiana-specific list identified sites where reportable quantities of hazardous substances have been introduced into the environment;
- ## 36 Resource Conservation and Recovery Information System-Small Quantity Generator (RCRIS-SQG): Sites identified as storing, treating and/or disposing of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA); and
- ## 61 Facility Index System (FINDS): sites not listed on any of the above manifests but identified on a multitude of more specific hazardous substance lists.

A majority of the hazardous substances sites in the project area occur along the US 31 and SR 431 corridors, specifically at the intersections of major roadways. These sites are a combination of large and small businesses, including industrial facilities, smaller service-based facilities, petroleum facilities and public utilities, all of which utilize or deal in large quantities of hazardous substances (i.e., petroleum, industrial solvents and cleaners, etc.). Several listed sites within the project area are categorized as “orphan,” and though they are within the project area boundaries, their exact location cannot be ascertained.

4.0 PRELIMINARY ALTERNATIVES ANALYSIS AND SCREENING

The development of alternatives for the US 31 Improvement Project began with a broad examination of potential solutions to the transportation needs of the region. The current transportation system, existing and projected traffic conditions and the overall mobility needs of the metropolitan area were evaluated in determining the purpose and need for the project. The major concerns were increasing traffic congestion and frequency of crash events. Regional transportation plans were also reviewed to ensure that the improvements to US 31 were consistent with approved planning documents. Alternatives considered include:

- ☐ No-Action;
- ☐ Travel Demand Management (TDM) alternatives;
- ☐ Transportation System Management (TSM) alternatives;
- ☐ Mass Transit alternatives; and
- ☐ Highway alternatives.

4.1 No-Action Alternative

The No-Action Alternative assumes that all of the projects in the current Indianapolis Metropolitan Planning Organization (MPO) Year 2025 Regional Transportation Plan would be implemented, except for the US 31 Improvement Project. Improvements planned in or near the project area include:

- ☐ INDOT programmed widening of Keystone Avenue (SR 431) from four lanes to six lanes from I-465 to US 31;
- ☐ City of Carmel programmed construction of a new four-lane local roadway, Illinois Street, from 103rd Street to 136th Street;
- ☐ City of Carmel programmed widening of 116th Street from two lanes to four lanes from Rangeline Road to Moontown Road;
- ☐ City of Carmel programmed widening of 126th Street from two lanes to four lanes from Pennsylvania Street to Adams Street;
- ☐ City of Carmel programmed widening of Old Meridian from two lanes to four lanes from Pennsylvania Street to Guilford;
- ☐ INDOT programmed widening of SR 32 from 1.6 miles west of US 31 to US 31; and
- ☐ INDOT placeholder for increased capacity along SR 32 from US 31 to 2.6 miles east of US 31 (Moontown Road).

Proposed transportation improvements are placed in two categories: programmed and placeholder. If a proposed improvement is programmed, the project has received sufficient study and a preferred alternative has been selected. Placeholders are categories for proposed improvements that offer a solution to the identified transportation problem but it is not clear if that proposed improvement is the “best” improvement. These projects are usually in the early stages of the planning process and additional study is required to determine the preferred improvement.

Additionally, the plan includes some TDM and TSM programs and policies intended to reduce travel demand and increase the efficiency of the transportation system. These are included in the MPO regional travel demand model for future years.

Phase 1: Purpose and Need

Traffic Congestion: This alternative would not reduce congestion on US 31. Currently, seven of the 15 signalized intersections operate at an unacceptable LOS during a peak hour. By 2025, 13 of the 15 intersections are projected to operate with unacceptable LOS.

Traffic Safety: This alternative would not improve safety on US 31. Currently, six of the ten roadway segments on US 31 experience crash rates greater than the statewide average for similar facilities. In addition, seven of the ten segments have injury crash rates greater than the statewide average. Without a reduction in traffic (or reassignment of trips to a higher-order facility) or a change in facility type, safety would not be improved.

Consistency with Transportation Plans: This alternative is not consistent with INDOT's Long Range Plan and regional transportation plans that call for improvements to US 31.

Conclusion

The No-Action Alternative would not address the purpose and need for this project. However, this alternative will be carried forward for evaluation in the DEIS and serve as a baseline when comparing the effectiveness and potential impacts of other alternatives.

4.2 Travel Demand Management (TDM) Alternatives

TDM alternatives are relatively low-cost ways of reducing travel demand and improving traffic flow. These alternatives consist of programs or policies focused on either reducing the number of vehicles on the roadway or distributing trips to less congested periods of the day. The goal is to relieve peak hour traffic congestion.

Vanpooling/Carpooling. Vanpooling and/or carpooling programs primarily target work trips and are typically implemented to increase vehicle occupancy and reduce the total number of auto trips. Successful programs require a concentration of workers living in close proximity and destined for the same location, such as a major office development or central business district. No significant vanpooling/carpooling programs are currently active in Hamilton County.

Non-motorized Facility Enhancements. Walking and bicycling are the two primary non-motorized modes with the potential to reduce automobile trips by offering a travel alternative for a variety of trips. However, these modes are only effective for short trips – approximately one mile for walking and six miles for bicycling – and in good weather conditions.

Presently, there are no sidewalks or shared-use (multi-use) paths along US 31. The Monon Trail, a bike path on a former railroad right-of-way, crosses under US 31 south of 146th Street near the

US 31/SR 431 interchange. Several streets are designated as bike routes but are very narrow and cannot accommodate both automobiles and bicycles.

Employer-Based Trip Reduction Program. An employer-based trip reduction strategy would combine several programs that would reduce travel demand during the peak hours. Presently, there are no significant employer sponsored trip reduction programs in the US 31 corridor. Strategies that could be implemented include:

- ## **Parking Management:** This program could include providing limited parking relative to the number of employees, charging a fee for parking or designating more desirable spaces for carpools and vanpools.
- ## **Financial Incentives:** Employers may provide tax-free subsidies to encourage employees to take other modes of transportation to work. A necessary element for success is the availability of transit or other modes that provide a competitive travel option.
- ## **Flexible Work Schedule:** Establishing flexible work schedules for employees is an attempt to reduce traffic congestion during peak periods. These work schedules include having employees begin or end their workday outside the traditional working hours or working compressed workweeks to reduce the number of work trips during the week.
- ## **Telecommuting:** This program allows employees to work from home one or more days during the week. This results in a reduction of total number of work trips.

Congestion Pricing. Congestion pricing is a program to charge users a fee for using the facility. The fee varies throughout the day based on traffic congestion levels with a higher fee during higher congestion. The users of the roadway would be encouraged to shift travel behavior to a different time period, route or mode based on the higher fee. Charging a fee also provides a revenue source for transportation improvements in the travel corridor. Under this alternative, a toll collection system would be implemented on US 31 between I-465 and SR 38. However, since US 31 is not a fully-controlled facility, implementation of a toll collection system would not be feasible.

Phase 1: Purpose and Need

Traffic Congestion: This alternative would not noticeably reduce traffic congestion on US 31. Outside of congestion pricing, the TDM alternatives considered for this project are expected to only minimally reduce traffic volumes on US 31.

Traffic Safety: This alternative would not improve safety on US 31. Without a reduction in daily traffic volume or a change in facility type, safety would not be improved.

Consistency with Transportation Plans: There are some TDM programs included in the Indianapolis MPO 2025 Regional Transportation Plan. However, this alternative is not consistent with INDOT's Long Range Transportation Plan and regional transportation plans that call for improvements to US 31.

Conclusion

The TDM alternatives would not address the purpose and need of this project as “stand alone” alternatives because they would not significantly reduce congestion or improve safety. Therefore, they were not advanced to Phase 2 of the screening process.

4.3 Transportation System Management (TSM) Alternatives

TSM alternatives are low-cost strategies of reducing traffic congestion and improving traffic flow. These alternatives consist of techniques or applications focused on improving the existing transportation network’s ability to handle traffic volumes by making it more efficient.

High Occupancy Vehicle (HOV) Lanes. HOV lanes can provide a significant incentive to rideshare when traffic congestion levels are particularly high by providing travel time savings as they bypass congested mixed-use lanes. One or two lanes on a roadway are restricted to vehicles with a minimum number of occupants, usually two or more. Most HOV facilities are located on multi-lane, controlled-access freeways and are physically separated from the other freeway lanes by a barrier. Because this at-grade facility currently has signalized intersections, HOV lanes would not be feasible. As a result, this option was not advanced for further analysis. High occupancy toll (HOT) lanes, which operate the same as HOV lanes except there is a fee to use the facility, also would not be feasible.

Reversible Lanes. Reversible traffic lanes provide the flexibility for the transportation system to respond to variations in traffic demand. If traffic flow is higher in one direction during certain hours of the day, reversing lanes provides the opportunity for capacity to more closely match demand. For example, lanes may operate inbound toward the central business district in the morning peak and outbound during the evening peak.

This alternative would not perform adequately on US 31. The traffic patterns do not indicate that the traffic volumes are significantly higher in one direction during certain times, especially on the southern section of US 31. The addition of reversible lanes would also drastically change the existing cross section, removing the center median and replacing it with travel lanes. As a result, this may increase the potential for higher accident rates. Therefore, reversible lanes are not a feasible option and were not advanced for further analysis.

Signal Coordination and Timing. Arterial signal systems timing programs can improve traffic flow in a corridor, increasing its efficiency. Conventional signal timing systems – those installed on US 31 - allow signals to respond to varying traffic conditions, including adjusting signal phasing and timing continuously depending on demand on each of the intersection’s approaches. With the increased demand along US 31, current hardware and timing plans could be further updated and optimized to respond to these increases. The signalized intersections along the southern portion of US 31, where signal spacing is relatively short, are currently coordinated.

Intersection Improvements. Low-cost improvements at intersections can improve traffic flow through the corridor. This alternative includes adding dedicated turn lanes to US 31 and cross streets. The five intersections projected to have the worst level of service in 2025, 106th, 116th,

126th streets, Greyhound Pass and SR 32, were analyzed with additional turn lanes using no-action volumes. The results of this analysis indicate that levels of service would improve but would not meet INDOT standards (LOS D or better) at four of the five intersections.

Expanded ITS Applications. Intelligent Transportation System (ITS) applications include a variety of technology-based programs intended to actively manage the transportation system. The most common systems are designed to provide travel information on road conditions to daily commuters. Commuters can access this information and adjust their travel routes in response to changing traffic conditions. Television, radio stations and web sites can receive a direct feed from a centralized traffic operation center which provide real time updates of traffic conditions. Information can also be provided by variable message signs along the roadway to warn drivers of upcoming conditions.

Incident management programs are designed to improve reliability of the road and reduce the effect of incidents, such as accidents or vehicle breakdowns, on travel delays by rapidly responding to correct a specific incident affecting traffic flow. This type of program is most effective in locations where traffic congestion is primarily incident driven and does not occur on a regular basis. This program can be integrated with ITS applications to divert traffic around the incident site.

Currently, INDOT operates an ITS system known as TrafficWise that detects congestion as it occurs and attempts to determine its cause. TrafficWise monitors traffic and incidents and provides updates to motorists by radio or roadway message signs. There are currently 11 dynamic message signs within the Indianapolis area with plans to expand to 23. Additionally, TrafficWise also operates freeway service patrols to provide roadway assistance to stranded motorists, Hoosier Helpers. These roadway-assistance vans travel throughout the Indianapolis area minimizing the effects of traffic delaying incidents.

For this project, this TSM alternative would include the full expansion of TrafficWise onto US 31.

Phase 1: Purpose and Need

Traffic Congestion: This alternative would not noticeably reduce recurring traffic congestion on US 31. Projected levels of service would be E or F at four of the five intersections analyzed if signal coordination and intersection improvements were implemented. It is unlikely that expansion of ITS applications would improve levels of service significantly.

Traffic Safety: This alternative would not improve safety on US 31. Without a reduction in travel use or a change in facility type, safety would not be improved.

Consistency with Transportation Plans: There are some TSM programs included in the Indianapolis MPO 2025 Regional Transportation Plan. However, this alternative is not consistent with INDOT's Long Range Transportation Plan and regional transportation plans that call for improvements to US 31.

Conclusion

The TSM alternatives would not address the purpose and need of this project as “stand alone” alternatives because they would not significantly reduce congestion or improve safety. Therefore, they were not advanced to Phase 2 of the screening process.

4.4 Mass Transit Alternatives

Transit service in the Indianapolis region consists of a bus-only transit system operated by IndyGo. Service is currently not available in Hamilton County, with the service area ending at 96th Street, the Marion/Hamilton county line. No short-term plans are in place to expand the region’s bus service. As part of the Northeast Corridor Study, the Indianapolis MPO has studied transit improvements from downtown Indianapolis northeast to Noblesville and includes part of the US 31 project area. This study analyzed the feasibility and effects of various roadway improvements along with expanded bus and rail service within the area. One alternative included three express bus routes to Carmel, Fishers and Noblesville. The additional express service results in an additional 4,000 transit trips by 2025 compared to the 2025 No-Action. These additional transit trips would not significantly reduce traffic volumes within the project area.

In an area such as the US 31 corridor, where trips are dispersed, significant transit service is not a viable option. Trips must be concentrated at both their origin and destination, with a number of individuals making relatively similar trips. This concentration of trips must include both the starting point, such as a residential development, and ending point, like a concentration of office development. Dispersed ridership results in insufficient revenue to cover a reasonable portion of operating costs.

The existing infrastructure and development patterns in the US 31 corridor are not well suited for transit service. Transit riders must be able to walk to the service from either their residence or a park and ride facility and then walk from the service to their final destination. Some transit providers are beginning to offer service in dispersed areas with new approaches, such as demand responsive services. Although these services often provide a needed service, particularly to those without access to an automobile, their effect on congestion is minimal.

Phase 1: Purpose and Need

Traffic Congestion: This alternative would not noticeably reduce traffic congestion on US 31. It is not reasonable to assume that enough travelers would divert to transit service to result in improvements to levels of service on US 31.

Traffic Safety: This alternative would not improve safety on US 31. Without a reduction in congestion or a change in facility type, safety would not be improved.

Consistency with Transportation Plans: This alternative is not consistent with INDOT’s Long Range Transportation Plan and regional transportation plans that call for improvements to US 31.

Conclusion

The Mass Transit Alternative would not address the purpose and need of this project as a “stand alone” alternative because they would not significantly reduce congestion or improve safety. Therefore, it was not advanced to Phase 2 of the screening process.

4.5 Highway Alternatives

Highway alternatives considered include widening US 31 to three through lanes in each direction and freeway alternatives that ranged from improving US 31 and SR 431 to urban freeway standards on existing alignment to providing a new freeway facility on a completely new alignment. Most of these alternatives include a combination of both (See Figure 4-1).

Initially, on- and off-alignment freeway alternatives identified in the Major Investment Study (MIS), completed in March 1997, were considered. However, these alternatives were modified to include all feasible improvements while minimizing the number of impacts to residential and commercial areas. Examples of some of the modifications made include refinement to the interchange proposed at 146th Street to avoid impacts to commercial development and alternatives reducing the traffic along SR 32 through downtown Westfield. Additionally, comments from the June 2001 Public Meeting and Interagency Review Meeting held for this project were considered as part of the alternative refinement process.

For all freeway alternatives, a full access-controlled facility is assumed. The typical footprint section through most sections includes three through lanes in each direction and a 55-foot wide median, within 270 feet of total right-of-way (See Figure 4-2). Alternatives were developed assuming the same typical section and a standard interchange footprint to allow for a balanced and relative comparison of potential impacts. Alternatives advanced for evaluation in the DEIS would be refined to minimize impacts to the extent practicable.

**Figure 4-1
Proposed Freeway Alternatives**

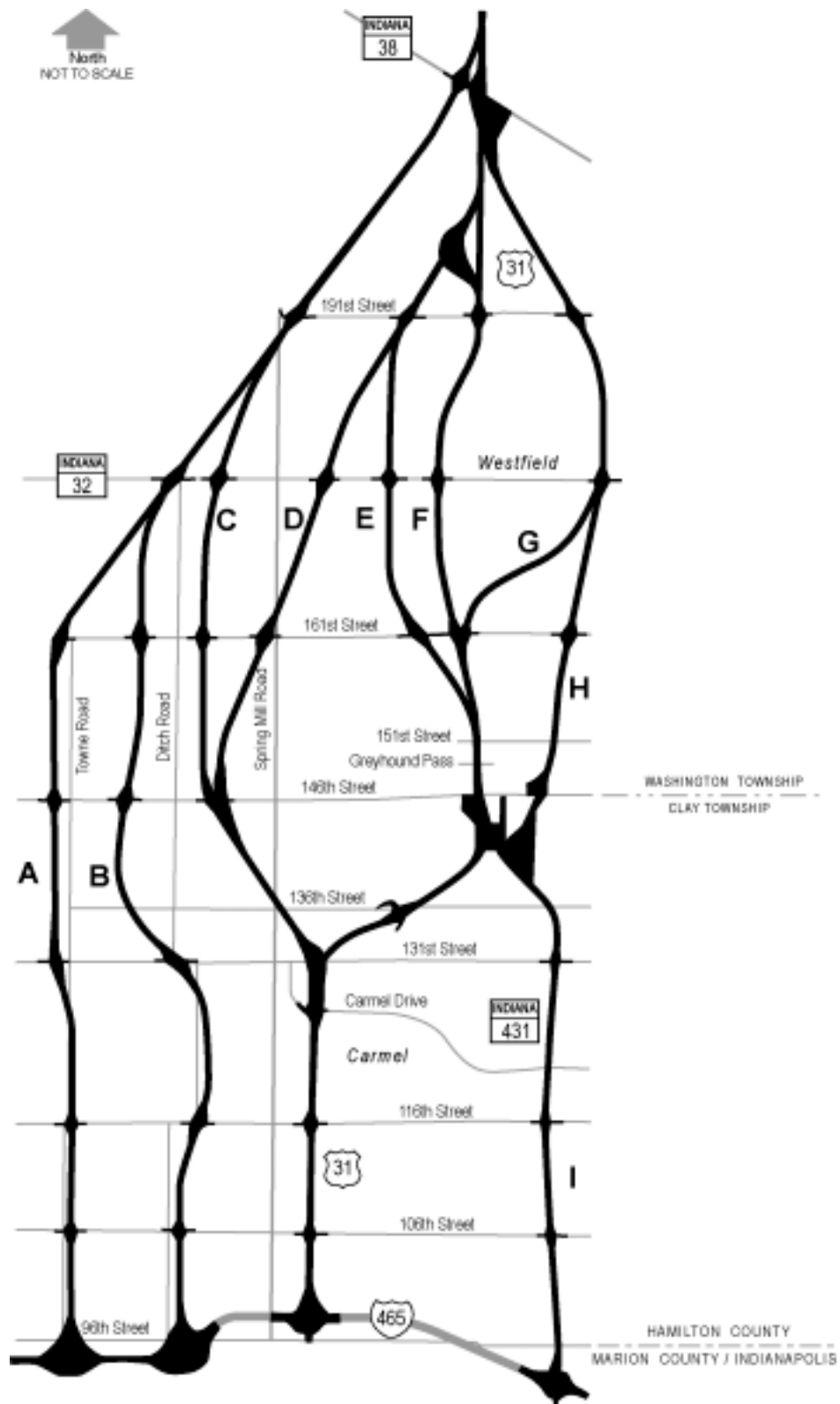
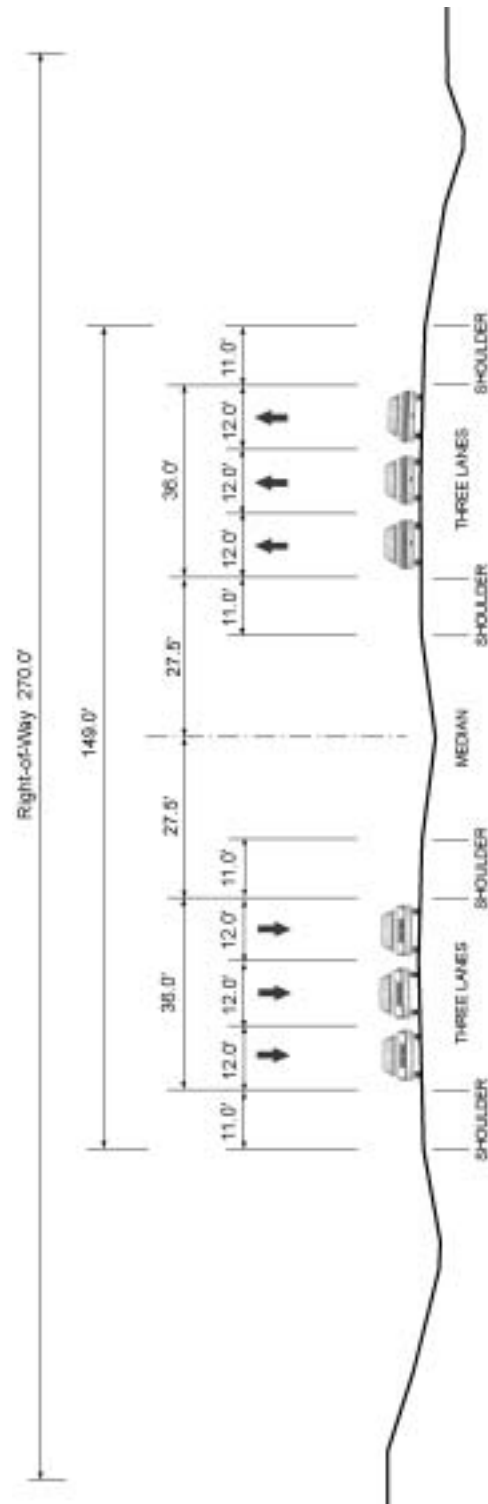


Figure 4-2
Proposed Typical Section
US 31 Freeway Alternative



Widen US 31 Alternative

KEY:

00,000 = 2025 WIDEN US 31 ALTERNATIVE ADT's

00,000 = 2025 NO-ACTION ADT's

(F) = 2025 ALTERNATIVE LOS
(F) = 2025 NO-ACTION LOS



4.5.1 Widen US 31 Alternative

This alternative consists of widening US 31 to three through lanes in each direction throughout the project area, while retaining the existing at-grade intersections.

Phase 1: Purpose and Need

Traffic Congestion: Even with the additional capacity, this alternative would not adequately reduce traffic congestion on US 31. All five of the intersections analyzed are projected to operate at LOS F in the future with this alternative.

Traffic Safety: Without a reduction in daily traffic or a change in facility type, safety would not be improved.

Consistency with Transportation Plans: This alternative is not consistent with INDOT's Long Range Transportation Plan and regional transportation plans that call for more substantial improvements to US 31.

Conclusion

The Widen US 31 Alternative would not adequately reduce congestion thus not addressing the purpose and need of this project. Therefore, it was not advanced to Phase 2 of the screening process.



4.5.2 Alternative A

Alternative A would provide a new freeway off the existing US 31 alignment. It is the westernmost alternative considered for this project and is approximately 14 miles in length. Alternative A's southern terminus is at I-465, where a system interchange would be provided. This alternative generally parallels Towne Road between I-465 and 161st Street, running in a north-south direction. North of 161st Street, the alternative turns to the northeast to tie back into US 31. Interchanges are tentatively proposed (locations remain under review and are subject to change) at 106th, 116th, 131st, 146th, 161st streets, SR 32, 191st Street and SR 38.

Phase 1: Purpose and Need

Traffic Congestion: Congestion is reduced for the vehicles diverting and utilizing the new freeway facility, as projected levels of service are A and B. Congestion is also reduced along existing US 31 causing three of the five intersections to have improved levels of service. However, four of the intersections still do not meet the INDOT standard of LOS D or better. Therefore, this alternative does not meet purpose and need.

Traffic Safety: Compared to the No-Action Alternative, some improvements in safety would be expected with this alternative. However, since substantial reassignment of trips to the higher-order freeway is not projected, improvements to safety would be minimal.

Consistency with Transportation Plans: Although this alternative would be consistent with INDOT's Long Range Transportation Plan for providing a "Statewide Mobility Corridor," neither INDOT nor the regional transportation plans identify a new freeway facility off the existing US 31 alignment.

Conclusion

Alternative A would result in minimal reductions in traffic congestion along the existing sections of US 31. Therefore, Alternative A would not meet the purpose and need of the project and was not advanced to Phase 2 of the screening process.

Alternative B



4.5.3 Alternative B

Alternative B would provide a new freeway facility, approximately 14 miles in length, off the existing US 31 alignment. The southern terminus for this alternative is at I-465, where a system interchange would be provided. Between I-465 and 126th Street, this alternative generally parallels Ditch Road. Between 126th Street and 161st Street, the alternative is located between Ditch Road and Towne Road. North of 161st Street, the alternative turns to the northeast, matching alternative A, to tie back into US 31. Interchanges are tentatively proposed (locations remain under review and are subject to change) at 106th, 116th, 131st, 146th, 161st streets, SR 32, 191st Street and SR 38.

Phase 1: Purpose and Need

Traffic Congestion: Congestion is reduced for the vehicles diverting and utilizing the new freeway facility, as projected levels of service are A and B. Congestion is also reduced along existing US 31 causing three of the five intersections to have improved levels of service. However, four of the intersections still do not meet the INDOT standard of LOS D or better. Therefore, this alternative does not meet purpose and need.

Traffic Safety: Compared to the No-Action Alternative, some improvements in safety would be expected with this alternative. However, since substantial reassignment of trips to the higher-order freeway is not projected, improvements to safety would be minimal.

Consistency with Transportation Plans: Although this alternative would be consistent with INDOT's Long Range Transportation Plan for providing a "Statewide Mobility Corridor," neither INDOT nor the regional transportation plans identify a new freeway facility off the existing US 31 alignment.

Conclusion

Alternative B would result in minimal reductions in traffic congestion along the existing sections of US 31. Therefore, Alternative B would not meet the purpose and need of the project and was not advanced to Phase 2 of the screening process.

Alternative C



4.5.4 Alternative C

Alternative C would provide a freeway upgrade along existing US 31 between I-465 and 131st Street. Between 131st Street and SR 38, a new off-alignment freeway is proposed west of US 31. North of 191st Street, Alternative C matches Alternatives A and B. The total length of the new freeway on this alignment is approximately 10 miles, while the upgrade of existing US 31 is approximately 3 miles. An interchange is tentatively proposed at 131st Street to connect US 31 with the new freeway. Interchanges are tentatively proposed (locations remain under review and are subject to change) at 106th, 116th, 126th, 146th, 161st streets, SR 32, 191st Street and SR 38.

Phase 1: Purpose and Need

Traffic Congestion: Congestion is reduced for the vehicles diverting and utilizing the new freeway facility, as projected levels of service range from A to D. Congestion is also reduced along existing US 31 causing both intersections to have improved levels of service. However, the Greyhound Pass intersection does not meet the INDOT standard of LOS D or better. Therefore, this alternative does not meet purpose and need.

Traffic Safety: Compared to the No-Action Alternative, some improvements in safety would be expected with this alternative. However, since substantial reassignment of trips to the higher-order freeway is not projected, improvements to safety would be minimal through that area.

Consistency with Transportation Plans: Although this alternative would be consistent with INDOT's Long Range Transportation Plan for providing a "Statewide Mobility Corridor," neither INDOT nor the regional transportation plans identify a new freeway facility off the existing US 31 alignment.

Conclusion

Alternative C would result in minimal reductions in traffic congestion along the unimproved sections of US 31. Therefore, Alternative C would not meet the purpose and need of the project and was not advanced to Phase 2 of the screening process.

Alternative D



4.5.5 Alternative D

Alternative D would provide a freeway upgrade along existing US 31 between I-465 and 131st Street. Between 131st Street and SR 38, a new off-alignment freeway is proposed west of US 31. Interchanges would be tentatively provided at 131st Street and north of 191st Street where the new alignment ties back into existing US 31. Interchanges are tentatively proposed (locations remain under review and are subject to change) at 106th, 116th, 126th, 146th, 161st streets, SR 32, 191st Street and SR 38.

Phase 1: Purpose and Need

Traffic Congestion: Congestion is reduced for the vehicles diverting and utilizing the new freeway facility, as projected levels of service range from A to D. Congestion is also reduced along existing US 31 causing both intersections to have improved levels of service. However, the Greyhound Pass intersection does not meet the INDOT standard of LOS D or better. Therefore, this alternative does not meet purpose and need.

Traffic Safety: Compared to the No-Action Alternative, some improvements in safety would be expected with this alternative. However, since substantial reassignment of trips to the higher-order freeway is not projected, improvements to safety would be minimal through that area.

Consistency with Transportation Plans: Although this alternative would be consistent with INDOT's

Long Range Transportation Plan for providing a "Statewide Mobility Corridor," neither INDOT nor the regional transportation plans identify a new freeway facility off the existing US 31 alignment.

Conclusion

Alternative D would result in minimal reductions in traffic congestion along the unimproved sections of US 31. Therefore, Alternative D would not meet the purpose and need of the project and was not advanced to Phase 2 of the screening process.

Alternative E



4.5.6 Alternative E

Alternative E would consist of upgrading existing US 31 to freeway standards between I-465 and 151st Street. Between 151st Street and SR 38, a new off-alignment freeway is proposed to the west of US 31. The new alignment matches alternative D, north of 191st Street. Approximately seven miles of this alternative would be on new alignment. The US 31/SR 431 interchange would be redesigned to provide all movements between US 31, SR 431 and 146th Street. Interchanges would be tentatively proposed (locations remain under review and are subject to change) at 106th, 116th, 126th, 136th, 161st Streets, SR 32, 191st Street and SR 38. Interchanges would be tentatively provided at north of 151st Street and north of 191st Street where the new alignment ties back into existing US 31.

Phase 1: Purpose and Need

Traffic Congestion: This alternative would result in an improved level of service at SR 32. Compared to the No-Action Alternative, the LOS at this location would improve from F to D, meeting INDOT standards. Projected freeway levels of service range from A through D and meet INDOT standards.

Traffic Safety: This alternative would improve safety on US 31 by reducing travel demand on the non-freeway facility and changing the facility type.

Consistency with Transportation Plans: This alternative is consistent with INDOT's Long Range

Transportation Plan for providing a "Statewide Mobility Corridor." However, neither INDOT's Long Range Transportation Plan nor regional transportation plans identify a new freeway facility off the existing US 31 alignment.

Based on the aforementioned findings, Alternative E meets the project purpose and need and was advanced to Phase 2 of the screening process.

Phase 2: Environmental Impacts

The potential impacts identified for Alternative E are presented in Appendix A, Table A-1 and Figures A-1 through A-4. The largest impacts to land use by this alternative occur to agricultural land (262 acres). The majority of these impacts occur between 151st Street and SR 38, where the

alternative is located off-alignment. In addition, most of the agricultural land supports prime farmland soils (203 acres). The alternative would result in the displacement of approximately 34 single-family residences and 9 retail buildings. The majority of the residential displacements occur north of 146th Street and at the potential 136th Street interchange. Approximately eleven acres of wetlands would also be impacted. As for stream impacts, Alternative E would result in 15 stream crossings that would involve 7,780 linear feet of stream. As with the impacts to agricultural land, the majority of the stream impacts occur north of 151st Street where the alternative is located off-alignment. The potential cultural resource impacts associated with this alternative include six archaeological sites and one eligible historic site (i.e., Lindley Farm). As for public parks/recreational areas (i.e., Section 4(f) property), Alternative E would result in an aerial crossing of the Monon Trail between 136th Street and Rangeline Road. However, no property would be impacted, therefore it would not be considered a Section 4(f) impact. Because Lindley Farm is an eligible historic site, it represents the only potential Section 4(f) impact associated with Alternative E.

Conclusion

Alternative E is being eliminated from further consideration based on a comparative analysis of impacts with other alternatives that were advanced to the Phase 2 screening process (See Section 5.0 – Preliminary Alternatives Eliminated from Further Consideration).

Alternative F



4.5.7 Alternative F

Alternative F would upgrade US 31 to freeway standards on the existing alignment between I-465 and SR 38. As part of this alternative, the US 31/SR 431 interchange would be redesigned to provide all movements between US 31, SR 431 and 146th Street. Interchanges are tentatively proposed (locations remain under review and are subject to change) at 106th, 116th, 126th, 136th, 161st streets, SR 32, 191st Street and SR 38.

Phase 1: Purpose and Need

Traffic Congestion: This alternative would reduce congestion on US 31. Projected freeway levels of service range from B through D and meet INDOT standards. All existing at-grade intersections through the project area would be removed with this alternative.

Traffic Safety: This alternative would improve safety on US 31 by changing the facility type.

Consistency with Transportation Plans: This alternative is consistent with INDOT's Long Range Transportation Plan and regional transportation plans that call for improvements to US 31.

Based on the aforementioned findings, Alternative F meets the project purpose and need and was advanced to Phase 2 of the screening process.

Phase 2: Environmental Impacts

The potential impacts identified for Alternative F are presented in Appendix A, Table A-1 and Figures A-1 through A-4. The largest impacts to land use by this alternative occur to commercial property (104 acres). The alternative would result in the displacement of approximately 42 single-family residences and 28 retail buildings. The majority of the residential displacements occur north of 146th Street and at the potential 136th Street interchange while the majority of the retail displacements are concentrated around the SR 32 interchange area. Associated with the retail displacements are eleven hazardous material sites. Approximately four acres of wetlands would also be impacted. As for stream impacts, Alternative F would result in 12 stream crossings that would involve 5,170 linear feet of stream. Additionally, one of the Town of Westfield's wellhead protection areas would be impacted,

however this area is currently disturbed by the existing US 31 alignment. The potential cultural resource impacts associated with this alternative include seven archaeological sites and two eligible historic sites (i.e., Lindley Farm and Hunt House). In regard to the historic sites, no structures would be directly impacted, rather the direct impacts for these sites would consist of land/property takings and access modification. As for public parks/recreational areas (i.e., Section 4(f) property), Alternative F would result in an aerial crossing of the Monon Trail between 136th Street and Rangeline Road. However, no property or right-of-way would be impacted. Alternative F would impact one acre of school property located on the northeast quadrant of the SR 32/US 31 interchange, adjacent to the Westfield High School football stadium. However, this land is not used for recreational purposes and therefore would not be considered a Section 4(f) impact. Because Lindley Farm and Hunt House are eligible historic sites, they represent the only two potential Section 4(f) impacts associated with Alternative F.

Conclusion

Alternative F is being carried forward for more detailed studies in the DEIS based on a comparative analysis of impacts with other alternatives that were advanced to the Phase 2 screening process (See Section 6.0 – Preliminary Alternatives to Be Carried Forward for Further Analysis in the DEIS).

Alternative G



4.5.8 Alternative G

Alternative G would consist of upgrading existing US 31 to freeway standards between I-465 and 161st Street. Between 161st Street and SR 38, a new alignment is proposed to the east of US 31. Approximately seven miles of this alternative would be on new alignment. The US 31/SR 431 interchange would be redesigned to provide all movements between US 31, SR 431 and 146th Street. Interchanges would be tentatively provided (locations remain under review and are subject to change) at 106th, 116th, 126th, 136th, 161st streets, SR 32 and 191st Street. An interchange would be tentatively provided at 161st Street where the new alignment ties into existing US 31. A new interchange is also tentatively proposed at the northern terminus of the new off-alignment portion of this alternative to allow for full access to SR 38 and the unimproved portion of US 31.

Phase 1: Purpose and Need

Traffic Congestion: This alternative would result in an improved level of service at SR 32. Compared to the No-Action Alternative, the LOS at this location would improve from F to D, meeting INDOT standards. Projected freeway levels of service range from A through D also meeting INDOT standards.

Traffic Safety: This alternative will improve safety on US 31 by reducing travel demand on the non-freeway section and changing the facility type.

Consistency with Transportation Plans: This alternative is consistent with INDOT's Long Range Transportation Plan for providing a "Statewide Mobility Corridor." However, neither INDOT's Long Range Transportation Plan nor regional transportation plans identify a new freeway facility off the existing US 31 alignment.

Based on the aforementioned findings, Alternative G meets the project purpose and need and was advanced to Phase 2 of the screening process.

Phase 2: Environmental Impacts

The potential impacts identified for Alternative G are presented in Appendix A, Table A-1 and Figures A-1 through A-4. The largest impacts to land use by this alternative occur to agricultural land (254 acres). The majority of these impacts occur between 161st Street and SR 38, where the alternative is located off-alignment. In addition, most of the agricultural land supports prime farmland soils (242 acres). The alternative would result in the displacement of approximately 29 single-family residences and 8 retail buildings. The majority of the residential displacements occur north of 146th Street and at the potential 136th Street interchange. Approximately nine acres of wetlands would also be impacted. As for stream impacts, Alternative G would result in 11 stream crossings that would involve 4,715 linear feet of stream. The potential cultural resource impacts associated with this alternative include five archaeological sites and one eligible historic site (i.e., Lindley Farm). In regard to the historic site, no structures would be directly impacted, rather the direct impact would consist of land/property takings. As for public parks/recreational areas (i.e., Section 4(f) property), Alternative G would result in an aerial crossing of both the Monon Trail and the South Union Street Trail. However, no property would be impacted. Because the Lindley Farm is an eligible historic site, it represents the only potential Section 4(f) impact associated with Alternative G.

Conclusion

Alternative G is being carried forward for more detailed studies in the DEIS based on a comparative analysis of impacts with other alternatives that were advanced to the Phase 2 screening process (See Section 6.0 - Preliminary Alternatives to Be Carried Forward for Further Analysis in the DEIS).



4.5.9 Alternative H

Alternative H would consist of upgrading existing US 31 to freeway standards between I-465 and SR 431. Between SR 431 and SR 38, a new alignment is proposed to the east of US 31. North of SR 32, the alignment matches Alternative G. Approximately eight miles of this alternative would be on new alignment. The US 31/SR 431 interchange would be redesigned to provide all movements between US 31, SR 431 and 146th Street. Interchanges would be tentatively provided (locations remain under review and are subject to change) at 106th, 116th, 126th, 136th, 161st streets, SR 32 and 191st Street. A new interchange is also tentatively proposed at the northern terminus of this alternative to allow for full access to SR 38 and the unimproved portion of US 31.

Phase 1: Purpose and Need

Traffic Congestion: This alternative would result in improved levels of service at Greyhound Pass and SR 32. Compared to the No-Action Alternative, the LOS at these locations would improve from F to D, meeting INDOT standards. Projected freeway levels of service range from A through D also meeting INDOT standards.

Traffic Safety: This alternative will improve safety on US 31 by reducing travel demand on the non-freeway section and changing the facility type.

Consistency with Transportation Plans: This

alternative is consistent with INDOT's Long Range Transportation Plan for providing a "Statewide Mobility Corridor." However, neither INDOT's Long Range Transportation Plan nor regional transportation plans identify a new freeway facility off the existing US 31 alignment.

Based on the aforementioned findings, Alternative H meets the project purpose and need and was advanced to Phase 2 of the screening process.

Phase 2: Environmental Impacts

The potential impacts identified for Alternative H are presented in Appendix A, Table A-1 and Figures A-1 through A-4. The largest impacts to land use by this alternative occur to agricultural

land (327 acres). The majority of these impacts occur between 151st Street and SR 38, where the alternative is located off-alignment. In addition, most of the agricultural land supports prime farmland soils (301 acres). The alternative would result in the displacement of approximately 36 single-family residences and 12 retail buildings. The majority of the residential displacements occur north of 146th Street and at the potential 136th Street interchange. Approximately 21 acres of wetlands would also be impacted. As for stream impacts, Alternative H would result in 12 stream crossings that would involve 9,130 linear feet of stream. The majority of the stream and floodplain impacts are associated with a longitudinal encroachment of Cool Creek between SR 431 and 151st Street. The potential cultural resource impacts associated with this alternative include five archaeological sites and one eligible historic site (i.e., Lindley Farm). In regard to the historic site, no structures would be directly impacted, rather the direct impact would consist of land/property takings. As for public parks/recreational areas (i.e., Section 4(f) property), Alternative H would result in an aerial crossing of the Monon Trail between 136th Street and Rangeline Road. However, no property or right-of-way will be taken. Because Lindley Farm is an eligible historic site, it represents the only potential Section 4(f) impact associated with Alternative H.

Conclusion

Alternative H is being eliminated from further consideration based on a comparative analysis of impacts with other alternatives that were advanced to the Phase 2 screening process (See Section 5.0 – Preliminary Alternatives Eliminated from Further Consideration).

Alternative I



4.5.10 Alternative I

Alternative I would include a new directional interchange at I-465 and an upgrade of SR 431 to freeway standards to the US 31/SR 431 interchange. North of this interchange, the proposed freeway would continue along the US 31 alignment to SR 38. As part of this alternative, the US 31/SR 431 interchange would be redesigned to provide all movements between US 31, SR 431 and 146th Street. Interchanges are tentatively proposed (locations remain under review and are subject to change) at 106th, 116th, 131st, 161st streets, SR 32, 191st Street and SR 38.

Phase 1: Purpose and Need

Traffic Congestion: Congestion is reduced for the vehicles diverting and utilizing the upgraded SR 431 freeway facility, as projected levels of service range from B to D. Congestion is also reduced along existing US 31 causing two of the three intersections to have improved levels of service. However, the three intersections south of 146th Street do not meet the INDOT standard of LOS D or better. Therefore, this alternative does not meet purpose and need.

Traffic Safety: Compared to the No-Action Alternative, some improvements in safety would be expected with this alternative. However, since substantial reassignment of trips to the higher-order freeway is not projected, improvements to safety would be limited through that area.

Consistency with Transportation Plans: This alternative is consistent with INDOT's Long Range Transportation Plan for providing a "Statewide Mobility Corridor." However, neither INDOT's Long Range Transportation Plan nor regional transportation plans identify upgrading SR 431 to freeway standards as a proposed improvement.

Conclusion

Alternative I would result in minimal reductions in traffic congestion along the unimproved sections of US 31. Therefore, Alternative I would not meet the purpose and need of the project and was not advanced to Phase 2 of the screening process.

4.5.11 Interchange Options

As part of this evaluation, the potential locations of interchanges were also explored. In the 1997 Major Investment Study (MIS), an interchange was recommended at 126th Street. For all freeway alternatives that are on the existing alignment through this area (i.e., Alternatives C, D, E, F, G and H), an interchange at this location was developed and evaluated. In addition, the City of Carmel has asked that INDOT consider an interchange at 131st Street. However, because of the proximity of these two interchanges (less than one mile apart), only one of the interchanges can be developed, according to INDOT design standards. The INDOT design standards state that the minimum interchange spacing in an urban area is one mile while spacing in a rural area is three miles. However, access in the form of cross-road connections to collector-distributor (CD) roadways may be acceptable even if access spacing to the CD roadway is less than one mile. Based on a preliminary evaluation of potential impacts at this time, neither interchange has any fatal flaws or would result in substantially different impacts. As a result, more detailed engineering and traffic analysis is needed to better determine which interchange would be the most cost-effective while minimizing impacts. Therefore, both interchange options will be carried forward for further evaluation in the DEIS.

An interchange at 151st Street was also recommended in the MIS. An interchange at this location, however, would be less than one mile from the proposed interchange at 146th Street. Therefore, an individual or independent interchange at both locations cannot be developed according to INDOT design standards. Additionally, an interchange at 151st Street could result in the displacement of as many as five retail buildings and one office building. Because of these reasons, an independent interchange at 151st Street will not be evaluated in the DEIS. However, the DEIS may include a single interchange configuration or system that integrates Rangeline Road, Greyhound Pass, 146th Street and/or 151st Street. The information presented in this report for each of the preliminary alternatives does not include an interchange at 151st Street.

4.6 Section 106 Consultation

On April 16, 2002, a Section 106 Consultation Meeting was held in accordance with 36 CFR Part 800 "Protection of Historic Properties" and FHWA-IN Section 106 Consultation Procedures. The Section 106 Consultation parties invited include:

- ## Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology
- ## Historic Landmarks Foundation of Indiana
- ## Hamilton County Historian
- ## Hamilton County Historical Society
- ## Delaware Nation (Oklahoma)
- ## Miami Tribe of Oklahoma
- ## Advisory Council on Historic Preservation
- ## Carmel-Clay Historical Society
- ## Westfield-Washington Historical Society
- ## Monon Railroad Historical and Technical Society, Inc. (MONRRHTS)

- ## Penn Central/Central Indiana Railroad Preservation
- ## New York Central System Historical Society
- ## Pennsylvania Railroad Technical and Historical Society

Those parties in attendance included the Historic Landmarks Foundation of Indiana and the Monon Railroad Historical and Technical Society, Inc. (MONRRHTS).

The purpose of the meeting was to introduce the consulting parties to the Section 106 resources in the project area found previously through the literature search. These resources were reviewed as to their location in the project area, proximity to the preliminary alternatives and the Area of Potential Effect (APE). For this phase of the project, the APE for each preliminary alternative was defined as a 3,000-foot wide corridor (1,500 feet on each side of the centerline). Additionally, potential direct impacts to structures or properties were also discussed, if applicable. A record of the meeting is on file for public review.

Following the meeting, written comments were received from the MONRRHTS, the Historic Landmarks Foundation of Indiana, the Hamilton County Historian and the Indiana Department of Natural Resources (Appendix C). The MONRRHTS indicated that any railroad-owned facilities of interest to them have been removed, and that other than having been a customer of the railroad, they do not have any interest in the Goodrich Brothers Grain Elevator. The Historic Landmarks Foundation of Indiana strongly encouraged further investigation into Alternative G as well as stressed their objection to any demolition of the Hunt House and their concern for the proximity of the alternatives to the Carmel and Chester cemeteries. The Hamilton County Historian advised that, in regard to Chester Cemetery, the Indiana Cemetery law prevents any right-of-way or utility grants with land “set aside for cemetery purposes.” Finally, the Indiana Department of Natural Resources indicated that the Lindley Farm and the Hunt House are both eligible for the NRHP, however all other sites do not meet the criteria to be considered eligible for inclusion on the Register at this time. The IDNR did not give any advisement, per their expertise, as to which alternative would be preferred.

5.0 PRELIMINARY ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Based on the findings of this study, the following Preliminary Alternatives are being eliminated from further study for the following reasons:

Widen US 31 Alternative

This alternative does not meet the purpose and need of the project.

Alternatives A, B, C, D and I

These alternatives do not meet the purpose and need of the project.

Alternative E

Alternatives E and G both provide a similar function of avoiding potential commercial and residential impacts along the existing US 31 corridor in the Westfield area. However, when comparing these two alternatives, Alternative E generally has greater overall impacts than Alternative G. It also has the highest number of stream crossings (15) and the second greatest impacts to wetlands (11 acres) and linear feet of streams (7,780 feet) when compared to all of the other preliminary alternatives. In addition, unlike Alternative G, Alternative E would not provide the added benefit of relieving traffic congestion on SR 32 through the Town of Westfield, which includes potential Section 4(f)/106 sites. Therefore, due to greater overall impacts and lack of traffic congestion relief on SR 32, Alternative E was eliminated in favor of Alternative G. As for Section 4(f) impacts, both Alternative E and G would result in potential impacts to the same site (i.e., Lindley Farm).

Alternative H

Alternative H would require the most right-of-way (516 acres) and result in the greatest impacts to agricultural land (327 acres), prime farmland soil (301 acres), linear feet of streams (9,130 feet), floodplain areas (80 acres) and wetlands (21 acres). More specifically, the majority of the wetland, stream, and floodplain impacts are related to a longitudinal encroachment along Cool Creek between SR 431 and 151st Street. This area has been identified by the US Fish and Wildlife Service as a sensitive ecosystem that should be avoided. It also may be potential habitat for the federally endangered Indiana bat. With regard to Section 4(f) impacts, Alternative H and G would result in the same potential impacts to Lindley Farm. However, Alternative H would result in greater impacts to natural resources than Alternative G.

6.0 PRELIMINARY ALTERNATIVES TO BE CARRIED FORWARD FOR FURTHER ANALYSIS IN THE DEIS

No-Action Alternative

The No-Action Alternative assumes that all of the projects in the current Indianapolis MPO Long Range Transportation Plan would be implemented with the exception of improvements to US 31. This alternative would not meet purpose and need for the project but serves as a baseline when comparing the effectiveness and potential impacts of the other alternatives.

Transportation Management

The Transportation Management (TM) Alternative includes a combination of Travel Demand Management (TDM), and Transportation System Management (TSM) and Mass Transit alternatives that would not be effective as stand alone options, but that offer benefits relative to the needs identified in the project area. Together, these options have the potential to improve the transportation system to various and limited degrees.

From the TDM alternatives, vanpooling/carpooling, non-motorized facility enhancements and employer-based trip reduction programs would be carried forward. Signal coordination, intersection improvements and Intelligent Transportation System (ITS) applications are options from TSM that would be carried forward for further analysis.

Alternative F

In addition to meeting the project's purpose and need, Alternative F would require the least amount of right-of-way (308 acres) that correspondingly results in the fewest impacts to agricultural land (101 acres), forestland (58 acres), floodplains (38 acres), and wetlands (4 acres) and the second fewest impacts to linear feet of streams (5,170). This alternative would have the lowest construction cost and total cost. It would also be consistent with state and regional transportation plans. Although this alternative would impact one more Section 4(f) site (i.e., Hunt House) than the other preliminary alternatives, it represents the alternative with the fewest impacts to natural resources.

Alternative G

In addition to meeting the project's purpose and need, Alternative G would have the fewest single-family (29) and retail (8) displacements. It would also have the least stream impacts (11 crossings/4,715 linear feet). Moreover, Alternative G reduces traffic demand along SR32 through the Town of Westfield, which includes a historic district and several other potential historic structures. Alternative G also represents one of the alternatives with the least Section 4(f) impacts (i.e., Lindley Farm).

For the DEIS, both Alternative F and G will be developed and evaluated with and without interchanges at 126th and 131st streets. For all interchange locations, alternative configurations may be developed and evaluated. In addition, the traffic forecasts will be refined further for the alternatives that will be evaluated in the DEIS.